Social and Economic Consequences of Rural Alcohol Use

Kelly J. Kelleher and James M. Robbins

One-quarter of the population of the United States lives in nonmetropolitan or rural areas (U.S. Congress 1990). These areas are notable for their rich diversity and varied lifestyles. From farming communities in the Midwest, to agricultural areas of the Mississippi Delta, Native American reservations, Appalachian and Ozark Highlands, and western oil-based boom towns, rural communities vary greatly in socioeconomic characteristics, ethnic and minority mix, and availability of health and social services. At the same time, rural communities share a number of characteristics: they are defined by the low population density; most are severely limited in access to professional health, mental health, and substance abuse resources; and rural economies are often volatile in nature with increased dependence on agricultural, extractive, and service industries (Gesler et al. 1992). Higher rates of poverty and substandard housing in rural areas in general and lower educational attainment of rural residents increase the chances that families from these regions will suffer the negative consequences of such health risk behaviors as problem drinking (Meade 1992).

Alcohol is the primary drug of abuse in rural areas (Kelleher and Rickert 1991). A growing body of evidence suggests that the consumption of alcohol and the prevalence of alcohol use disorders is as high or higher in some rural populations as in metropolitan samples (Helzer et al. 1991). This may be especially true for rural areas experiencing economic down-turns or uncertainties and for those groups within rural communities at highest risk (i.e., the disenfranchised, minority, or poor). Moreover, indications are that consumption may be increasing for some rural populations, although further documentation is needed to identify communities that are most vulnerable.

While studies examining consumption and patterns of drinking for rural populations are providing new evidence about the causes of alcohol use in rural areas, there has been almost no discussion of the social and economic consequences or how these may differ in rural communities and metropolitan areas.
Correlational evidence can be presented to support the view that marital, family, and workplace conflicts predispose one to drink, and

to support the view that these problems are outcomes of abusive drinking. The bulk of the literature considers these conflicts to be risk factors for problem drinking. Conceptualizing them as consequences of alcohol use, however, may be important for the design of interventions and policies that lessen the negative effects of alcohol use on rural communities and underscore the public health importance of excessive or problematic alcohol use. The purpose of this chapter is to review a broad framework for examining the social and economic consequences of alcohol use, explore how those consequences might vary for rural populations, and suggest potentially fertile areas for continued work.

SOCIAL CONSEQUENCES

Social consequences of alcohol use can be grouped into those resulting in changes in social interactions with others (direct social consequences) and those resulting in changes in one's social position or life chances (indirect social consequences). These effects and factors that modify them are depicted in figure 1, modified from Kreitman (1992).

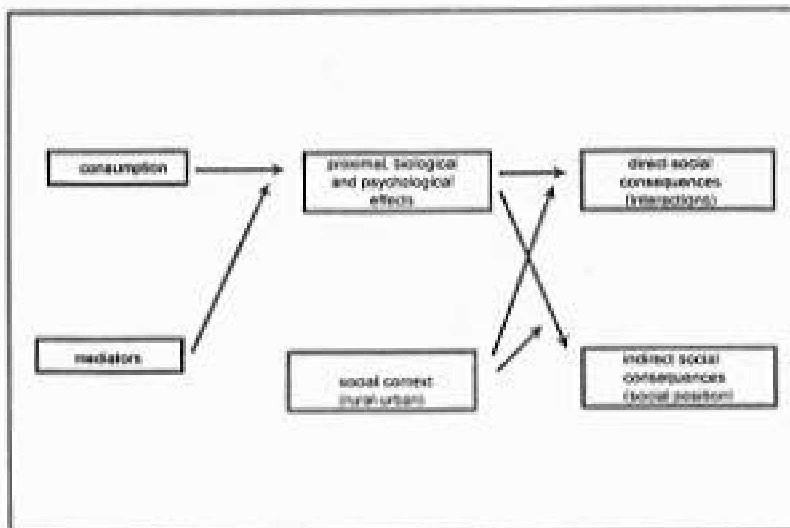

FIGURE 1. *Model of the social consequences of alcohol consumption.*

SOURCE: Modified from Kreitman 1992.

Consumption in this model refers to the intake of alcoholic beverages and is usually measured in terms of absolute ounces of ethanol. Of course, patterns of consumption in addition to quantity of intake may be critical factors in affecting consequences. The direct health effects of alcohol are most often associated with total ethanol intake, whereas many psychosocial consequences may be related to episodes of acute intoxication or to prolonged dependency symptoms accompanying alcoholism (Hauge and Ingens-Jensen 1986). For example, hepatic (or liver) toxicity is highly correlated with total consumption, whereas family violence is often centered around episodes of intoxication.

Proximal biological and psychological effects of alcohol consumption relevant to a discussion of social consequences are the acute and chronic effects of alcohol on the physiological processes of the body and the effects of alcohol on mood, cognition, and memory. Dependence symptoms and acute alterations in mood and thinking processes may seriously impair individuals' ability to interact with others and their performance in social roles. Alcohol also may be a factor in aggressive behavior, leading directly to social conflicts (Collins and Schlenger 1988).

A variety of mediators affect the extent to which consumption results in specific biological and psychological consequences. These include expectations about alcohol effects, gender, metabolism of alcohol, and other biologic vulnerabilities or resilience (Kreitman 1992). Most of these factors affecting metabolism are not mutable. However, alcohol expectancies or the belief system about the likely effects of alcohol consumption appear to play an important role in level or patterns of consumption and may be amenable to educational interventions (Brown et al. 1985; George and Marlatt 1986).

Specifically excluded from this discussion are effects of alcohol on behavior and safety as they produce mortality and morbidity, except to the extent that these effects alter social interactions and social role performance. Falls, fire, motor vehicle injuries, hunting injuries, drowning, and high-risk sexual behavior are well-known behavioral consequences of alcohol consumption (Department of Health and Human Services (DHHS) 1994*b*). Because these events are largely expressed as health consequences, they will not be addressed in this chapter. Rather, the focus will be on consequences of alcohol consumption that occur within the context of the marriage, family, community, and workplace of the drinker.

The social context in which drinking occurs will influence the consequences of consumption. Social context includes ethnic or social group norms that define appropriate and inappropriate occasions for, and amounts of, drinking (Herd 1984). For example, use of any alcohol in communities where abstention is the norm can have immediate negative consequences for social interactions and threaten one's social position in the community. By contrast, regular heavy drinking may have ironic social advantages in some ethnic communities and social groups in which consumption is expected and valued (Linsky et al. 1986). Similarly, consequences of use in certain social contexts, such as the home, may depend on negative consequences of use in unrelated contexts such as work. Alcohol intoxication may or may not be viewed as problematic by spouses of heavy drinkers depending upon whether it interferes with job performance or maintenance of household function (Wiseman 1991).

The biological and psychological effects of alcohol consumption have direct consequences for individual drinkers by altering their interactions with primary and secondary social relations. The psychopharmacologic effects of excessive consumption, including disinhibition, cognitive-perceptual distortion, attention deficit, and bad judgments, may directly impact the quality of interactions with others.

Proximal effects of consumption also have indirect consequences for drinkers by altering their performance of social roles—the central duties individuals perform to maintain the functioning of society. Each societal member occupies a set of social roles. Roles are associated with commonly held assumptions about how a person should behave, and shared expectations concerning the ways others in society should behave toward the person performing the role. Four primary social roles are relevant for this discussion: spouse, parent, community member, and worker (or student). Over time, performance in each of these roles is influenced by immediate interactions with other society members who judge role-related behavior against norms for that behavior. Expectations of role-appropriate behavior likely vary by age, gender, social or ethnic group, and rural or urban residence.

The concept of social role is central to definitions of problem drinking and alcohol abuse. According to a widely held paradigm in alcohol studies, the cardinal indications of problem drinking are the negative direct consequences of excessive consumption on social interactions and, indirectly, on the performance of social roles

(American Psychiatric Association 1987; Donovan and Jessor 1985). Alcohol abuse and dependence are partly defined by the conflicts with others caused by alcohol use and disruptions in role performance due to drinking (American Psychiatric Association 1987).

In the home, adults may fill two primary social roles—spouse and parent. Alcohol clearly has direct consequences on the performance of these roles. More than 60 percent of individuals with a diagnosis of alcohol abuse or dependence and 30 percent of weekly heavy drinkers report family conflicts due to drinking (Helzer et al. 1991). Conflict can manifest as spousal abuse or as other relational problems. Alcohol is commonly involved in episodes of spousal abuse (Kantor and Straus 1989). Although information is limited, one-third to more than one-half of episodes of spouse abuse involving police are associated with alcohol abuse (Morgan 1982).

Unfortunately, the mechanism by which alcohol might contribute to domestic violence is not fully understood (McCrady 1987). A variety of authors suggest that alcohol acts directly to increase aggression (Morgan 1982); other studies suggest that alcohol inhibits empathy and increases acceptance of violence (Gustafson 1987). Alcohol probably also contributes to stress and depression in the household, thereby increasing the opportunities for conflict (Turnbull and Gomberg 1988). Interestingly, victims of domestic violence are also more likely to have alcohol problems than are controls, and the violence perpetrated upon them is more likely to be severe (Miller et al. 1989).

Among rural families, the increased level of tension brought about by volatile economic conditions, higher rates of under- and unemployment, and substandard housing may increase the risk of spouse maltreatment by drinkers and maltreatment of drinking spouses. Alternatively, the lack of anonymity felt by residents of small communities may inhibit spouse maltreatment by drinkers. Heavy drinkers may be less likely to be assaultive if they anticipate that the visible marks of spouse abuse will be noticed by friends and acquaintances in the community.

Indirect social consequences of drinking on the family likely begin before the formation of the family as a social group. Although the literature is sparse, alcohol consumption and alcohol use problems probably influence mate selection indirectly by increasing or decreasing one's chances in the marriage market. Men and women with alcohol problems are less likely to ever marry than are

nondrinkers (Clark and Midanik 1979). Moderate drinking, however, may increase the likeli-hood of marriage. Alcohol consumption in adolescence is associated with better romantic relationships in young adulthood. In a longitudinal study of more than 600 teenagers, Newcomb and Bentler (1988) found that drinking frequency, but not quantity, during adolescence was associated with decreased self-derogation and fewer feelings of loneliness in romantic relationships 8 years later. The researchers reason that alcohol consumption at this age reduces social inhibitions and allows awkward adolescents more opportunity to develop adequate social skills. No assessment of social networks was reported.

Heavy drinking is clearly associated with relational problems during marriage and stability of the marriage. Heavy drinkers experience more marital conflict and increased tension in their spousal relationships (Helzer et al. 1991). It appears that increased tension and conflict are related less to the amount of drinking per se and more to decreased household functioning or productivity, at least for men (Zweben 1986). Nonetheless, marital satisfaction is lower among heavier drinkers than nondrinkers (McCrady 1987), and more marriages end in divorce when one partner drinks heavily (Schoenborn 1991). Alcoholism is particularly high among those with repeated failed marriages. A quarter of individuals who have been divorced or separated more than once compared to only 9 percent of those with stable marriages meet criteria for a diagnosis of alcohol abuse or dependence (Helzer et al. 1991). While serious alcohol use problems appear to increase the chances of marital disruption, frequency of use may not be associated with divorce. In a well-designed longitudinal study of adolescent drug use, frequency of alcohol use from age 15 through 25 was not significantly associated with the likelihood of divorce or separation during that time (Kandel et al. 1986).

The impact of drinking on the marriage may vary according to residence. In close-knit rural families, where alternative sources of kin and friend support are available, heavy drinking may be less disruptive of marriages. Similarly, negative attitudes toward divorce in conservative rural communities may keep some spouses in marriages damaged by alcohol. Conversely, in rural farming communities where husband and wife work as partners in the performance of an integrated series of tasks, abusive drinking may threaten both the marital relationship and the family's livelihood (Rosenfield 1985).

The direct consequences of alcohol abuse on the parenting role are first expressed before childbirth with the well-known effects of consumption on the risk of pregnancy complications, low birthweight, fetal alcohol syndrome and fetal alcohol effect (Coles et al. 1992; DHHS 1994*a*). Following birth, alcohol problems continue to affect the performance of the parental role. Parents with alcohol abuse or dependence diagnoses are more likely to physically abuse their children, and this trend remains when such confounding variables as gender, age, socioeconomic status, and other parental psychopathology are factored into the equation (Chilman et al. 1966; Morgan 1982). Child neglect is even more common among those with alcohol dependence; it has been found to be four times more likely among parents with alcohol dependence than among control parents without alcohol disorders (Fillmore 1984; Kelleher et al. 1994).

Indirectly, alcohol abuse first affects the parental role by influencing the number of children ever born to a family, and the number of children born out of wedlock. Families of heavy drinkers are larger and include more children born to single parents (Frances et al. 1980). Excessive consumption also brings changes to the home environment with unpre-dictable and inconsistent parenting styles and lower income (Latham and Napier 1992). Mothers who drink heavily have been found to be less active and stimulating in their interactions with infants and less securely attached to them (O'Connor et al. 1987). For parents with alcohol dependence, the focus on obtaining alcohol to the exclusion of other responsibilities is likely to lead to inadequate parenting and escalation of behavioral problems of children. Parental alcoholism can also have indirect social consequences for children, including poor school performance, delinquency, and early abusive use of alcohol (Sher 1991; Wolin et al. 1980).

Among rural families, economic hardship may be associated with a pattern of harsh parenting that is transmitted across generations (Conger et al. 1992; Simons et al. 1991). While physical discipline sometimes results in obedient, prosocial behaviors in children, the addition of parental alcohol abuse may lead to problematic adjustment of children. More research is needed on how alcohol may influence parenting in rural families, and how the interplay between rural childrearing practices and alcohol consumption may have unintended negative consequences on child development.

The direct consequences of heavy or problem drinking on the social role of community members are most often thought of in terms of

criminal behavior and victimization. Individuals involved in property crime and violent offenses against others are much more likely to have alcohol problems with or without drug problems than comparison groups in the community. Almost half of those with an alcohol use disorder report having had fights due to drinking and a third have been arrested because of drinking (Helzer et al. 1991). Upwards of 50 percent of all homicides involve drinking by the perpetrator, and incarcerated criminals report that drinking quantity and frequency increased immediately preceding criminal activity (Roizen 1982; Wieczorek et al. 1990; Robert Wood Johnson Foundation 1994). Nevertheless, most people consuming alcohol and even heavy drinkers do not commit violent crimes. Although alcohol is not the sole cause of violent behavior, it must be seen as an important predisposing factor for some people.

Many studies have also shown higher rates of alcohol consumption among victims of violence (Fagan 1990). Alcohol has been found in the blood of high proportions of homicide victims. In an analysis of medical examiner records, Welte and Abel (1989) found detectable blood alcohol levels (BAL) in 42 percent of 792 homicide victims in Erie County, New York. Of those, over 70 percent had a BAL greater than 0.10 milligrams per dekaliter (mg/dL). Victims of spousal violence are also thought to have higher rates of abusive drinking. In a random sample of U.S. families, Kantor and Straus (1989) found that 46 percent of severely assaulted women reported being drunk one or more times in the past year compared to 16 percent of nonvictimized women. Victimization may be associated with alcohol abuse because drinkers are more vulnerable to violence, because direct acts of alcohol-induced aggression provoke violence, or because drinking victims more often find themselves in social contexts where violence is common.

The popular notion that criminal behavior is an urban problem does not apply to alcohol-related offenses. Rural states and counties have arrest rates for substance abuse violations (e.g., driving under the influence, liquor law violations, drunkenness, and possession of illegal substances) equal to those of nonrural states and counties (General Accounting Office (GAO) 1990). Rural states, counties, and towns have higher arrest rates involving illegal use of alcohol than nonrural states, suburban counties, and larger cities. Most prison inmates in rural states have abused alcohol, other drugs, or both (GAO 1990). No comparative data are available on rural and urban rates of violent or property crimes associated with alcohol abuse.

In addition to criminal behavior and victimization, alcohol may also have indirect consequences on community participation. Although this area has not been explored empirically, the impact of alcohol-use disorders on community leadership and volunteerism is likely a negative one. Abusive drinkers often withdraw from social contact and social commitments and the aggressive behavior of heavy drinkers often results in social ostracism (Colsher and Wallace 1990; Cummingham et al. 1993). Rural commu-nities may be particularly affected by the absence of effective leadership because they are less likely to have formal social service agencies for many needs and are more dependent on benevolent and church groups (Bachrach 1981).

Heavy drinking has direct effects on workplace performance. Studies of work-related problems due to alcohol use have not focused on rural issues to any discernible extent. Nevertheless, almost every industry is adversely affected by alcohol problems in the workplace. The assumed relationship of alcohol consumption to substandard job performance has formed the foundation for interventions geared toward the identification and rehabilitation of the problem drinker (Roman 1990). The Institute of Medicine reviewed studies in the area of employee substance abuse and concluded that approximately 10 percent of all workers had drinking problems that adversely affected their job performance (Institute of Medicine 1994). These problems manifested themselves in a variety of ways, including increased absenteeism, decreased productivity, excessive use of health care, more frequent turnover, and greater requirements for retraining (Robert Wood Johnson Foundation 1994). This report also noted that the prevalence of alcohol-related job problems was likely to be affected by both the industry type and job characteristics. For example, construction, transportation, and manufacturing had a much higher prevalence of alcohol problems on the job than other service, trade, or professional industries. These industries are overrepresented as a proportion of all jobs in rural regions compared to urban areas (Anonymous 1992).

While evidence has accumulated that job performance may be affected by alcohol consumption patterns, nearly all of this research is based on samples of workers identified as problem drinkers. The alleged negative relationship between worker productivity and alcohol abuse may therefore be questioned. Cook (1991) and Heien and Pittman (1989, 1993) conclude that, once adjustments are made for differences in education and demographic characteristics, little credible evidence exists to support the belief that heavy drinkers in

general are less productive members of the labor force than others (Cook 1991; Heien and Pittman 1989, 1993).
Less directly, alcohol abuse may lead to job loss due to nonperformance, lost earning potential due to denied promotions, and lower job satisfaction. Heavy-drinking workers have been judged to be less self-directed and cooperative than other workers (Blum et al. 1993). The 1-year prevalence rate of alcohol abuse or dependence among those who meet criteria for underemployment (6 months or more out of work in the past 5 years) is more than twice that of those who do not meet criteria (12 and 5 percent, respectively) (Helzer et al. 1991). Frequency of alcohol use in adolescence is positively associated with number of different employers by age 25 for both men and women (Kandel 1980).

Heavy drinking may also limit optimal worker role performance indirectly by limiting educational attainment and aspirations necessary to complete the training required for a higher level position. The lifetime prevalence of alcohol use disorders is higher among those who drop out of educational programs at any level, including junior high, high school and college, than those who finish the program (Helzer et al. 1991).

To the extent that economic structures of rural areas are more tentative and fragile, rural workers are likely more vulnerable to layoffs and to dismissals with cause. Rural areas are characterized by less diversified economies with higher rates of unemployment and lower educational attainment among workers (Anonymous 1992; Goetz 1993). All deviant behavior, including problem drinking, is therefore likely to have stronger negative consequences for rural individuals in the workplace. Moreover, rural industries disproportionately include jobs at high risk for unintentional injuries such as construction, mining, and manufacturing (U.S. Congress 1990). The risk for such injuries may increase with the motor impairment associated with alcohol consumption.

Although alcohol frequently has a number of negative social consequences, at least when consumed heavily, the research conducted to date has not examined whether or how these consequences are manifest in rural populations. Discussion of these effects must therefore be speculative, though one could suggest that rural populations would likely experience different social consequences based on the various components in the model outlined in figure 1. Thus, rural populations may differ in patterns of consumption, expectancies about the effects of alcohol, or social context.

Consumption patterns probably differ in rural areas. For years, parts of the South and West have been noted to have lower per capita consumption rates. These rural areas have a much greater proportion of abstainers who are included in the denominator (Williams et al. 1991). When average consumption of alcohol is computed only among drinkers, however, many of the rural States have very high levels of consumption. Work from the National Institute of Mental Health Epidemiological Catchment Area study suggests similar findings. Rural study sites have both more abstainers and a greater number of persons with alcohol abuse or dependence (Blazer et al. 1985). Adolescents in some rural areas are also more likely to be abstainers, but rural areas may have more daily adolescent drinkers as well (Johnston et al. 1989; Kelleher et al. 1992*a*).

Thus, the prevalence data suggest that rural populations include a greater proportion of abstainers than do metropolitan areas. The literature on rural-urban differences examining rates of heavy drinking is equivocal. This may be a result of methodologic differences in earlier work, cohort effects, or variations across rural areas. For example, even in an area as homogeneous as the rural South, the tradition of alcohol consumption differs drastically among regions and cultural groups. Abstinence, connected historically to the temperance movement, Protestant religion, and African-American struggle for emancipation, is very common among young African-American girls of the rural South (Kelleher et al. 1992*a*). In contrast, the tradition of self-reliance and alcohol production for private use and profit among residents of Appalachia and the Ozark Highlands may translate into higher rates of consumption among both males and females. Further analyses are needed of unique qualities of rural areas and the meaning of alcohol to rural populations.

The mediators that influence proximal consequences may also be different for rural populations. Although there is no reason to suspect that the metabolic or genetic makeup of rural and metropolitan groups is notably different, alcohol expectancies may markedly alter behavioral and psychological effects following alcohol consumption and could vary by region. Rural adolescents may initiate drinking earlier than all but inner-city youth and do so more often with their families (Kelleher et al. 1992*b*). In fact, Chambers suggested that rural families were more likely to model heavy drinking in front of their children (Chambers et al. 1982). If personal beliefs about alcohol are more closely associated with normative, family-based rituals among rural residents, drinking and occasional heavy drinking

may have less damaging consequences for personal relationships and role performance. In contrast, if alcohol use is an expression of rebellion against restrictive rural values, the consequences of drinking may be more severe and lasting.
The component of the model most likely to differ between rural and metropolitan areas is social context. Rural communities are by definition smaller and less densely populated than metropolitan communities. Social networks in rural communities generally support fewer relationships, but these relationships tend to be more concentrated, family based, and intense than in metropolitan areas (Fischer 1982; Korte 1982). In comparison to the anonymity of urban living, rural residents spend a greater part of their lives in direct contact with acquaintances who may judge their behavior. These characteristics lead to a set of rural values that include self-reliance, family autonomy, conservatism, religiousness, and intolerance for deviance (Wagenfeld et al. 1994).

Some authors contend that traditional values in rural communities have eroded with in- and out-migration over the past two decades and increasing reliance on telecommunications. To the extent that a set of core values still characterizes rural communities, proximal alcohol consequences will likely be labeled as more problematic for rural than for urban drinkers. Expanded research in the area of how proximal consequences of alcohol consumption are labeled differently among various rural regions and metropolitan comparison groups should be fruitful.

Drinking in rural communities with a large population of abstainers, more conservative social values, less tolerance for deviation, and relative absence of anonymity may be subject to greater social and legal sanctions than drinking in more permissive urban communities. Some evidence does suggest that heavy drinkers in rural areas are more likely to experience negative social consequences. In a national survey, Callahan and colleagues (1969) noted that similar portions of rural and metropolitan individuals described negative social consequences associated with alcohol consumption. These consequences included trouble with friends, family, employers, or legal authorities over drinking. Among heavy drinkers only, however, 65 percent of the rural respondents described negative social consequences, while only 40 percent of metropolitan subjects experienced negative consequences.

In the preceeding discussion, areas in which rural residents may experience social consequences of heavy drinking that are different in

quality and magnitude from those experienced by urban residents have been proposed. Alcohol may have differential effects on family conflict and disruption, parenting skills and outcomes, criminal behavior and victimization, and work stability and performance in rural areas. The unique expectancies associated with alcohol use, the traditional meaning of alcohol to rural areas, and the context of economic insecurity and social values associated with rural life are held to influence social consequences of rural drinking.

In an effort to address these rarely studied consequences of alcohol use, the obvious question of reverse causality has not been considered. It is certainly true that many conflicts in personal relationships and problems in role performance discussed here can be seen as predisposing one to abusive drinking. These risk factors are important to a full understanding of rural alcohol use. However, study of the consequences of use presented here is also necessary to inform interventions that can lessen the damaging effects of alcohol use problems in rural regions.

Further research on the effects of alcohol use problems on personal relationships, social roles, and life chances should acknowledge the multifactorial nature of social interactions. The range and number of interactions that occur in a single day for most people make it difficult to attribute some specific portion of the good or bad elements of an interaction to alcohol use or abuse. While alcohol abuse may be present, it is inappro-priate to conclude that negative social interactions and deficiencies in the performance of social roles can be attributed solely to alcohol abuse. Further research should properly identify the specific role of alcohol within a constellation of factors influencing social behavior, social position, and life chances.

ECONOMIC CONSEQUENCES

Alcohol consumption results in a wide variety of consequences to society. Positive consequences include tax revenues, job production, and marketing promotions that underwrite charitable or entertainment events. Negative economic consequences range from the costs of treatment for alcohol abuse and its medical complications to the loss of potential wages for a person injured in an alcohol-related motor vehicle crash and the increased medical care used by families of persons with alcohol dependence. Estimates of the economic consequences of alcohol consumption are largely dependent

on the assumptions made about which costs will be included and which data should be used to estimate such costs.

In addition to the assumptions made about which costs should be included in estimates of economic consequences, the methodology chosen to assign value to various items is a critical factor. At least two approaches have been employed. The human capital approach is the most commonly used method for estimating the economic effects of alcohol (Rice et al. 1985). According to this method, cost estimates are generated by examining direct costs (costs for which payments are made) and indirect costs (costs for which resources or opportunities are lost). To calculate the latter, human life is valued at the estimated wage earnings by age and gender, and lost potential becomes the measure of indirect costs. The disadvantages of this method are the failure to include pain and suffering losses in the estimates and the devaluation of the elderly, women, and children who have lower income potential.

The second method of estimating costs of illness is the willingness to pay approach (Rice and Hodgson 1982). In this method, value is placed on human life by how much individuals would pay to avoid some degree of risk for death or disability. As with the human capital approach, willing-ness to pay may be subject to biases related to socioeconomic status. Moreover, it is difficult to estimate in practice and may be subject to substantial variation across populations and over time. Most authors have relied upon the human capital approach, although integrative approaches employing both willingness to pay and human capital are receiving more attention (Gustafson et al. 1995).

Some investigators have suggested that estimates of the total costs of illness are not appropriate topics for policy studies, or at least policy interventions (Manning et al. 1989). In other words, studies of total costs are less useful than research on societal costs. These studies differentiate internal costs (those costs willingly and intentionally incurred by the individual) from external costs (those costs imposed on society by the individual). For example, an individual might choose to purchase alcohol and pay the associated taxes and opportunity costs as internal costs. However, costs related to premature death benefits from a group insurance plan for a drunken driver who dies from a motor vehicle crash are largely born by others and, therefore, would be classified as external. Manning and colleagues (1989) focused on external costs and suggested that heavy drinkers impose considerable external costs on society that are not recouped through taxes or other means. This stands in contrast to the costs imposed by smokers. In

the Manning analyses, smokers pay taxes that approximate the external costs they impose on society.
In the estimation of economic consequences, economists have generally discussed core costs (e.g., items dealing with the care and support of the drinker) and other related costs (e.g., costs to society for welfare and criminal justice systems that are required to deal with the negative social consequences of alcohol-related problems). Among the core costs are direct costs for which reimbursements or payments are made and indirect costs that represent the value of productivity lost to alcohol-related morbidity and mortality. Some economists have included the costs of fetal alcohol syndrome in calculating total costs.

Landis published one of the first comprehensive estimates of the economic consequences of alcohol abuse (Landis 1945). In "The Economic Aspects of Inebriety," Landis suggested that alcohol production, distribution, marketing, and consumption created many jobs and tax revenues for Federal, State, and local agencies. Landis also estimated that the costs of psychiatric, medical, criminal justice, and injury-related expenses would total almost $350 million per year, while wage losses would increase these total annual economic costs of alcohol in the United States to $780 million.

Although Landis' estimate of economic consequences of alcohol abuse was substantial at the time, the refined methodology and improved data available have resulted in substantially greater cost estimates today. The most comprehensive study to date employed a cost-of-illness approach to conclude that alcohol abuse in the United States cost $70 billion a year in 1985, $85 billion in 1988 (Rice et al. 1990), and $98.6 billion in 1990 (Rice 1993). The breakdown of the various categories of costs is illustrated in table 1. As is the case with other estimates, the largest component of alcohol costs is related to the premature death and impairment of individuals and the loss to society of their productive capacity. However, some authors have challenged these estimates as excessive primarily because of the assumptions about the causal role of alcohol in these losses.

Conceptually, the economic consequences of alcohol use for rural areas might differ from estimates for metropolitan areas if either the amount of alcohol consumed or the costs associated with a specific amount of alcohol consumption are different in rural areas.

A limited amount of evidence suggests that rural consumption may be greater in certain areas. Blazer and colleagues (1985) report higher rates of alcohol abuse and dependence in rural areas compared to metropolitan samples. Johnston and associates (1989) note that high school seniors

TABLE 1. *Categories for external costs of alcohol abuse (excludes internal costs or those assumed by drinker).*

Core costs
- Direct treatment of alcohol problems
- Indirect costs from injuries (lost productivity)

Other related costs
- Direct
  - Crime
  - Motor vehicle crashes (property loss)
  - Fire
  - Social or welfare aid
- Indirect
  - Incarceration for DUI (lost productivity)

from rural areas are slightly more likely to drink daily than are their urban counterparts. In contrast, Kelleher and colleagues (1992*a*) note that rural residence is associated with lower consumption for some females. Rural States do have higher rates of alcohol-related arrests and alcohol-related treatment admissions than do more urban States, although it is unclear whether this reflects greater numbers of problems or less tolerance for deviance (GAO 1990). Similarly, the increased frequency of motor vehicle-related fatalities and injuries associated with alcohol in rural areas may be linked more closely to the quality of roads and greater distances traveled in rural regions than to alcohol.

Estimating the likely costs for a given amount of alcohol consumption in rural areas requires some background on rural economies. The most striking finding is the marked heterogeneity among rural communities (U.S. Congress 1990). This is consistent with the sociological literature that documents greater variation among rural communities than between rural and adjacent metropolitan communities (Wagenfeld et al. 1994). Nevertheless, some findings are consistent across rural areas. First, the mechanization of agriculture and changing land values have dramatically reduced the proportion of the population living in rural areas and the number working in agriculture. The population share for rural areas has roughly halved in the past 50 years; less than one-quarter of the population is rural (Goetz 1993). Even more striking, the employment share of farmers during the same period fell from approximately 20 percent to 3 percent. To compensate for declining income, 92 percent

of farm families earn off-farm income with more than half of that coming from off-farm salaries.

Rural areas are characterized by greater levels of poverty, substandard housing, and school dropout than metropolitan areas (U.S. Congress 1990; Anonymous 1992). Moreover, the elderly and very young constitute a larger proportion of the rural population, leading to a greater dependency ratio (Bachrach 1981) and higher spending on social and human services to support these groups. Rural females are also more likely to spend significant time in caring for impaired or disabled family members, limiting their out-of-house income (Horwitz and Rosenthal 1994). Rural families are also less likely to be insured than are metropolitan families and to have higher out-of-pocket expenditures for health care.

Goetz (1993) suggests that the lower educational attainment of rural populations contributes to the inadequate economic development characterizing many rural communities. Moreover, Goetz postulates that factors that discourage educational investment (such as school funding disparities) or individual behaviors (such as alcohol abuse) affect rural areas disproportionally because of the greater inefficiencies in translating educational investment in rural areas into economic opportunity. However, the lower wages and earnings opportunities in rural areas suggest that the predicted human capital costs of alcohol consumption would be lower for rural as compared to urban areas.

Because no work has been conducted on estimating the economic consequences of alcohol consumption among rural versus metropolitan populations, it seems useful to provide preliminary analyses of alcohol-related work problems among rural and metropolitan patients presenting for treatment of alcohol dependence. Gustafson and associates (1995) have noted that work-related problems and absentee days are the best predictors of total costs for chronic conditions among adults. The largest components of total costs for health conditions are for nonmedical payouts and lost-opportunity costs related to the workplace.

Study of the social and economic consequences of rural alcohol use is new. Therefore, it is appropriate before embarking on major research efforts to define the goals of such study. Conceptualizing social consequences in terms of altered social interactions and impairments in role functioning may underscore the unique social context of rural communities. Rural family structure, friendship patterns, community obligations, workplace requirements, and drinking norms are not simply less sophisticated versions of those in the metropolis, nor are they consistent across rural

areas. By analyzing each of these dimensions of the rural social context, informed study of rural alcohol use can incorporate the rural ethic without treating it as monolithic. Careful study of the special social consequences of rural alcohol abuse may lead to novel opportunities for preventive interventions.

In addition, the examination of the total costs of alcohol consumption can draw attention to the magnitude of rural alcohol abuse. For advocates, the study of how alcohol consumption affects rural economies and industries already in crisis may motivate support for programs to treat and prevent alcohol abuse. Studying external costs of alcohol consumption may suggest to legislatures and planners ways to change rates for alcohol to increase the aggregate level of economic well-being. The potential benefits of such research will not be realized until significant efforts are devoted to examining the unique needs and diversity of rural communities and populations.

REFERENCES

Anonymous. In: Gesler, W.M., and Ricketts, T.C., eds. *Health in Rural North America: The Geography of Health Care Services and Delivery.* New Brunswick, NJ: Rutgers University Press, 1992.

American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* 3d ed. rev. Washington, DC: American Psychiatric Association, 1987.

Bachrach, L. Human services in rural areas: An analytical review. In: Department of Health and Human Services Monograph 22. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1981.

Blazer, D.; George, L.K.; Landerman, R.; Pennybacker, M.; Melville, M.L.; Woodbury, M.; Manton, K.G.; Jordan, K.; and Locke, B. Psychiatric disorders: A rural/urban comparison. *Arch Gen Psychiatry* 42:651-656, 1985.

Blum, T.C.; Roman, P.M.; and Martin, J.K. Alcohol consumption and work performance. *J Stud Alcohol* 54:61-70, 1993.

Brown, S.; Goldman, M.; and Christiansen, B. Do alcohol expectancies mediate drinking patterns of adults? *J Consult Clin Psychol* 53:512-519, 1985.

Callahan, D.; Cisin, I.; and Crossley, H. *American Drinking Practices.* New Haven, CT: College and University Press, 1969.

Chambers, C.; Inciardi, J.; and Siegal, H. The use and abuse of licit drugs in rural families. *Chem Depend Behav Biomed Issues* 4:153-165, 1982.

Chilman, C.S.; Lagey, J.; Schiller, J.; and Johnson, M. *Psychological and Economic Aspects of Alcoholism. Research Report #3.* Washington, DC: U.S. Department of Health, Education, and Welfare, 1966.

Clark, W.B., and Midanik, L. Alcohol use and alcohol problems among U.S. adults: Results of the 1979 national survey. In: *Alcohol Consumption and Related Problems*. National Institute of Alcohol Abuse and Alcoholism Monograph 1. DHHS Pub. No. (ADM)82-1190. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1979.

Coles, C.D.; Platzman, K.A.; Smith, I.; James, M.E.; and Falek, A. Effects of cocaine and alcohol use in pregnancy on neonatal growth and neurobehavioral status. *Neurotoxicol Teratol* 14:23-33, 1992.

Collins, J.J., and Schlenger, W.E. Acute and chronic effects of alcohol use on violence. *J Stud Alcohol* 49:516-521, 1988.

Colsher, P.L., and Wallace, R.B. Elderly men with histories of heavy drinking: Correlates and consequences. *J Stud Alcohol* 51:528-535, 1990.

Conger, R.D.; Conger, K.J.; Elder, G.H.; Lorenz, F.O.; Simons, R.L.; and Whitbeck, L.B. A family process model of economic hardship and adjustment of early adolescent boys. *Child Devel* 63:526-541, 1992.

Cook, P.J. "The social costs of drinking." In: *Negative Consequences of Alcohol Use.* Oslo, Norway: Norwegian Ministry of Health and Social Affairs, 1991.

Cummingham, J.A.; Sobell, L.C.; and Chow, V.M.C. What's in a label? The effects of substance types and labels on treatment considerations and stigma. *J Stud Alcohol* 54:693-699, 1993.

Department of Health and Human Services. Effects of alcohol on fetal and postnatal development. In: *Eighth Special Report to the U.S. Congress on Alcohol and Health.* Department of Health and Human Services National Institutes of Health Pub. No. 94-3699. Rockville, MD: National Institutes of Health, 1994*a*. pp. 203-211.

Department of Health and Human Services. Effects of alcohol on behavior and safety. In: *Eighth Special Report to the U.S. Congress on Alcohol and Health.* Department of Health and Human Services National Institutes of Health Pub. No. 94-3699. Rockville, MD: National Institutes of Health, 1994*b*. pp. 233-250.

Donovan, J.E., and Jessor, R. Structure of problem behavior in adolescence and young adulthood. *J Consult Clin Psychol* 53:890-904, 1985.

Fagan, J. Intoxication and aggression. In: Tonry, M., and Wison, J.Q., eds. *Crimes and Justice*. Vol. 13. Chicago: University of Chicago Press, 1991.

Fillmore, K. Research as a handmaiden of policy: An appraisal of estimates of alcoholism and its cost in the workplace. *J Public Health Policy* March:40-64, 1984.

Fischer, C. *To Dwell Among Friends.* Chicago: University of Chicago Press, 1982.

Frances, R.J.; Timm, S.; and Bucky, S. Studies of familial and nonfamilial alcoholism. I. Demographic studies. *Arch Gen Psychiatry* 37:564-566, 1980.

General Accounting Office. "Rural Drug Abuse: Prevalence, Relation to Crime, and Programs." Report submitted to Program Evaluation and Methodology Division. Washington, DC: General Accounting Office, 1990.

George, W., and Marlatt, G. Effects of alcohol and anger on interest in violence, erotica, and deviance. *J Abnorm Psychol* 95:150-158, 1986.

Gesler, W.; Hartwell, S.; Ricketts, R.; and Rosenberg, M. Introduction. In: Gesler, W., and Ricketts, T., eds. *Health in Rural North America: The Geography of Health Care Services and Delivery.* New Brunswick, NJ: Rutgers University Press, 1992.

Goetz, S.J. Human capital and rural labor issues. *Am J Agricul Econ* 75:165-168, 1993.

Gustafson, R. Alcohol and aggression: A test on an indirect measure of aggression. *Psychol Rep* 60:241-242, 1987.

Gustafson, D.H.; Helstad, C.P.; Hung, C.F.; Nelson, G.; and Batalden, P. The total cost of illness: A metric for health care reform. *Hosp Health Serv Admin* 40:54-71, 1995.

Hauge, R., and Ingens-Jensen, O. Relationship between alcohol consumption, alcohol intoxication and negative consequences of drinking in four Scandinavian countries. *Br J Addict* 81:13-24, 1986.

Heien, D.M., and Pittman, J. The economic cost of alcohol abuse: An assessment of current methods and estimates. *J Stud Alcohol* 50:67-79, 1989.

Heien, D.M., and Pittman, J. The external costs of alcohol abuse. *J Stud Alcohol* 54:302-307, 1993.

Helzer, J.E.; Burnam, A.; and McEvoy, L.T. Alcohol abuse and dependence. In: Robins, L.E., and Regier, D.A., eds. *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study.* New York: Free Press, 1991.

Herd, D. Ambibuity in black drinking norms: An ethnohistorical interpretation. In: Bennett, L., and Ames, G., eds. *American Experience and Alcohol.* New York: Plenum Press, 1984.

Horwitz, M.E., and Rosenthal, T.C. The impact of informal care giving on labor force participation by rural farming and nonfarming families. *J Rural Health* 10:266-272, 1994.

Institute of Medicine. *Under the Influence: Drugs and the American Workforce.* Washington, DC: National Academy Press, 1994.

Johnston, L.; O'Malley, P.; and Bachman, J. *Drug Use, Drinking and Smoking: National Survey Results from High School, College, and Young Adult Populations, 1978-1988.* Ann Arbor, MI: University of Michigan, Institute for Social Research, 1989.

Kandel, D.B. Developmental stages in adolescent drug involvement. In: Lettieri, D.J.; Sayers, M.; and Pearson, H.W., eds. *Theories on Drug Abuse: Selected Contemporary Perspectives.* National Institute on Drug Abuse Research Monograph 30. DHHS Pub. No. (ADM)83-967. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1980.

Kandel, D.B.; Davies, M.; Karus, D.; and Yamaguchi, K. The consequences in young adulthood of adolescent drug involvement. *Arch Gen Psychiatry* 43:746-754, 1986.

Kantor, G.K., and Straus, M.A. Substance abuse as a precipitant of family violence victimization. *Am J Drug Alcohol Abuse* 15:73-89, 1989.

Kelleher, K., and Rickert, V. Rural adolescent alcohol use: An overview. *J Rural Health* 7:93-99, 1991.

Kelleher, K.J.; Chaffin, M.; Hollenberg, J.; and Fischer, E. Alcohol and drug disorders among physically abusive and neglectful parents in a community-based sample. *Am J Public Health* 84(10):1586-1590, 1994.

Kelleher, K.J.; Pope, S.; and Wayne, J. Use of primary care services by rural adolescents with depression or drinking problems. In: Gonzales, J., ed. *Proceedings of the Sixth Annual National Institute on Mental Health (NIMH) International Research Conference on Primary Care Mental Health Research.* Abstract. Bethesda, MD: NIMH, 1992*b*.

Kelleher, K.J.; Rickert, V.I.; Hardin, B.H.; Pope, S.K.; and Farmer, F.L. Rurality and gender: Effects on early adolescent alcohol use. *Am J Dis Child* 146:317-322, 1992*a*.

Korte, C. Urban-nonurban differences in social behavior and social psychological models of urban impact. *J Soc Issues* 36:29-51, 1982.

Kreitman, N. The individual in social context. In: Lader, M.; Edwards, G.; and Drummond, D., eds. *Nature of Alcohol and Drug-Related Problems.* New York: Oxford University Press, 1992.

Landis, B. Economic aspects of inebriety. *Q J Stud Alcohol* 201-214, 1945.

Latham, P.K., and Napier, T.L. Psychosocial consequences of alcohol misuse in the family of origin. *Int J Addict* 27:1137-1158, 1992.

Linsky, A.S.; Colby, J.P.J.; and Straus, M.A. Drinking norms and alcohol-related problems in the United States. *J Stud Alcohol* 47:384-393, 1986.

Manning, W.; Keeler, E.; Newhouse, J.; Sloss, E.; and Wasserman, J. Taxes of sin: Do smokers and drinkers pay their way? *JAMA* 261:1604-1609, 1989.

McCrady, B.S. Interpersonal contexts, alcohol consumption and alcoholism: Implications for treatment. *Adv Behav Res Ther* 9:127-143, 1987.

Meade, M.S. Implications of changing demographic structures for rural health services. In: Gesler, W., and Ricketts, T., eds. *Health in Rural North America: The Geography of Health Care Services and Delivery.* New Brunswick, NJ: Rutgers University Press, 1992.

Miller, B.; Downs, W.; and Gondoli, D. Spousal violence among alcoholic women as compared to a random household sample of women. *J Stud Alcohol* 50:533-540, 1989.

Morgan, P. Alcohol and family violence. *Alcohol Consumption and Related Problems.* Rockville, MD: Department of Health and Human Services, 1982. pp. 223-253.

Newcomb, M.D., and Bentler, P.M. Impact of adolescent drug use and social support on problems of young adults: A longitudinal study. *J Abnorm Psychol* 97:64-75, 1988.

O'Connor, M.J.; Sigman, M.; and Brill, N. Disorganization of attachment in relation to maternal alcohol consumption. *J Consult Clin Psychol* 55:831-836, 1987.

Rice, D.P. The economic cost of alcohol abuse and alcohol dependence: 1990. *Alcohol Health Res World* 17:10-11, 1993.

Rice, D., and Hodgson, T. Value of human life revisited. *Am J Public Health* 72:536-538, 1982.

Rice, D.; Hodgson, T.; and Kopstein, A. Economic costs of illness: A replication and update. *Health Care Financing Rev* 7(1):61-80, 1985.

Rice, D.; Kelman, S.; Miller, L.S.; and Dunmeyer, S. *Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985.* Report submitted to the Office of Financing and Coverage Policy of the Alcohol, Drug Abuse and Mental Health Administration, Department of Health and Human Services. Berkeley, CA: University of California, Institute for Health and Aging, 1990.

Robert Wood Johnson Foundation. *Substance Abuse: The Nation's Number One Health Problem.* Waltham, MA: Institute of Health Policy, Brandeis University, 1994.

Roizen, J. Estimating alcohol involvement in serious events. In: *Alcohol Consumption and Related Problems.* National Institute of Alcohol Abuse and Alcoholism Monograph 1. DHHS Pub. No. (ADM)82-1190. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1979.

Roman, P.M. *Alcohol Problem Intervention in the Workplace: Employee Assistance Programs and Strategic Alternatives.* New York: Quorum Books, 1990.

Rosenfield, R.A. *Farm Women: Work, Farm and Family in the United States.* Chapel Hill, NC: University of North Carolina Press, 1985.

Schoenborn, C. Exposure to alcoholism in the family: U.S. 1988. In: *Advance Data from Vital and Health Statistics, No. 205.* Hyattsville, MD: National Center for Health Statistics, 1991.

Sher, K.J. *Children of Alcoholics.* Chicago: University of Chicago Press, 1991.

Simons, R.L.; Whitbeck, L.B.; Conger, R.D.; and Chyi-In, W. Intergenerational transmission of harsh parenting. *Devel Psychol* 27:159-171, 1991.

Turnbull, J., and Gomberg, E. Impact of depressive symptomatology on alcohol problems in women. *Alcohol Clin Exper Res* 12:374-381, 1988.

U.S. Congress, Office of Technology Assessment. *Health Care in Rural America.* Report no. OTA-H-434. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1990.

Wagenfeld, M.O.; Murray, J.D.; Mohatt, D.F.; and DeBruyn, J.C. *Mental Health and Rural America: 1980-1993.* NIH Pub. No. 4-3500. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1994.

Welte, J.W., and Abel, E.L. Drinking by the victim. *J Stud Alcohol* 50:197-201, 1989.

Wieczorek, W.F.; Welte, J.W.; and Abel, E.L. Alcohol, drugs and murder: A study of convicted homicide offenders. *J Crim Just* 18:217-227, 1990.

Williams, G.; Stinson, F.; Brooks, S.; Clem, D.; and Noble, J. *Apparent Per Capita Alcohol Consumption: National, State and Regional Trends, 1977-1989.* National Institute of Alcohol Abuse and Alcoholism Surveillance Report 20. Washington, DC: Supt. of Docs., U.S. Govt. Print. Off., 1991.

Wiseman, J.P. *The Other Half: Wives of Alcoholics and Their Social-Psychological Situation.* New York: Aldine DeGruyter, 1991.

Wolin, S.; Bennett, L.; Noonan, D.; and Teitelbaum, M. Disrupted family rituals: A factor in the intergenerational transmission of alcoholism. *J Stud Alcohol* 41:199-214, 1980.

Zweben, A. Problem drinking and marital adjustment. *J Stud Alcohol* 47:167-172, 1986.

ACKNOWLEDGMENT

This work is supported in part by the Staunton Farm Foundation and National Institute of Alcohol Abuse and Alcoholism (NIAAA) grant no. R29-AA09500. Helpful comments from Dr. Gayle Boyd of NIAAA and data for table 1 from Dr. Thomas McGuire of Brandeis University are gratefully acknowledged. This manuscript was prepared by Ms. Marilyn Ferguson.

AUTHORS

Kelly J. Kelleher, M.D., M.P.H.
Associate Professor of Pediatrics and Psychiatry
Department of Pediatrics
University of Pittsburgh School of Medicine
3510 Fifth Avenue, Suite 1
Pittsburgh, PA 15213

James M. Robbins, Ph.D.
Associate Professor of Pediatrics and Psychiatry
University of Arkansas for Medical Sciences
Arkansas Children's Hospital
Department of Pediatrics
800 Marshall Street
Little Rock, AR 72202

Click here to go to page 220